

SN 10/719,426  
Docket No. S-100,556  
In Response to Office Action dated January 10, 2006

2

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

**Claim 1 (original):** A through-the-earth communication system comprising:

an audio signal input device;

a transmitter operating at a predetermined frequency sufficiently low to effectively penetrate useful distances through-the earth, and having an analog to digital converter receiving said audio signal input and passing said audio signal input to a data compression circuit whose output is connected to an encoding processor, said encoding processor output being provided to a digital to analog converter;

an amplifier receiving analog output from said digital to analog converter for amplifying said analog output and outputting said analog output to an antenna;

a receiver having an antenna receiving said analog output and passing said analog output to a band pass filter being connected to an analog to digital converter that provides a digital signal to a decoding processor whose output is connected to a data decompressor, said data decompressor providing a decompressed digital signal to a digital to analog converter; and

an audio output device receiving analog output from said digital to analog converter for producing audible output.

**Claim 2 (original):** The apparatus as described in Claim 1 wherein said audio signal input device is a microphone.

**Claim 3 (original):** The apparatus as described in Claim 1 wherein said antenna is a loop antenna.

**Claim 4 (original):** The apparatus as described in Claim 1, wherein said encoding processor operates using quadrature phase shift keying.

**Claim 5 (original):** The apparatus as described in Claim 1, wherein said encoding processor operates using a QAM-16 processor.

SN 10/719,426  
Docket No. S-100,556  
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3

Claim 6 (original): The apparatus as described in Claim 1, wherein said predetermined frequency is approximately 7 kHz.

Claim 7 (original): The apparatus as described in Claim 1, wherein said predetermined frequency is approximately 4 kHz.

Claim 8 (original): The apparatus as described in Claim 1, wherein said band pass filter is of the wideband 4-pole elliptic design.

Claim 9 (original): The apparatus as described in Claim 1, wherein said antenna is a SQUID detector connected to a flux locked loop.

Claims 10 - 23 (canceled)